

App. No. 09/560,269  
Amendment dated February 13, 2007  
Reply to Office Action of November 13, 2006

**Listing of claims:**

1. (Currently amended) A computer-implemented method for collecting information relating to execution of an application including at least one tail merged portion, the method being executed on a computer, the method comprising:

determining a set of probe locations in the application, wherein determining a set of probe locations includes:

identifying a probe location at a beginning of a calling function,  
identifying a probe location at an end of the calling function,  
identifying a probe location at a beginning of a first called function,  
identifying a probe location at an end of the first called function,  
identifying a probe location in the calling function at the beginning of a call to the first function,  
identifying a probe location in the calling function at the end of the call to the first function,  
identifying a probe location at a beginning of a jump to a second called function  
function  
identifying a probe location at an end of the jump to the [[a]] second called function, and  
eliminating the probe location at the end of the first called function and eliminating the probe location at the end of the jump to the second called function when the first called function includes a jump to calls the second called function and when the second called function includes a return returns to the calling function; function;  
inserting probes in the identified locations that are not eliminated; and  
collecting non-redundant information relating to the execution of the application using the inserted probes.

Claims 2-4 (Cancelled).

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5. (Currently amended) The method of claim 1, wherein a first probe is inserted and configured to collect an address of the first called function, an address of the second called function, a first stack pointer, and a first time indicator, and further wherein a second probe is inserted and configured to collect the address of the second called function, a second stack pointer, and a second time indicator.

6. (Cancelled).

7. (Previously presented) The method of claim 1, wherein a first probe is inserted and configured to collect an address of the calling function, an address of the first called function, a first stack pointer, and a first time indicator, and further wherein a second probe is inserted and configured to collect the address of the first called function, a second stack pointer, and a second time indicator.

8. (Previously presented) The method of claim 1, further comprising:  
identifying a block of code to which execution of the application is directed upon occurrence of an error; and  
identifying a first probe location at a beginning of the identified block of code and a second probe location at an end of the identified block of code.

9. (Previously presented) The method of claim 8, wherein a first probe is inserted in the first probe location to collect an address of the block of code, a first stack pointer, and a first time indicator, and a second probe is inserted in the second probe location to collect the address of the block of code, a second stack pointer, and a second time indicator.

10. (Previously presented) The method of claim 1, further comprising inserting probes in the probe locations that were not eliminated to collect the information relating to the execution of the application.

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11. (Original) The method of claim 10, further comprising analyzing the collected information.

12. (Currently amended) A computer-readable storage medium having an application including computer-executable instructions including at least one tail merged portion, the computer-executable instructions comprising:

determining a set of probe locations in the application, wherein determining a set of probe locations includes:

- identifying a probe location at a beginning of a calling function,
- identifying a probe location at an end of the calling function,
- identifying a probe location at a beginning of a first called function,
- identifying a probe location at an end of the first called function,
- identifying a probe location in the calling function at the beginning of a call to the first called function,
- identifying a probe location in the calling function at the end of the call to the first function,
- identifying a probe location at a beginning of a jump to a second function,
- identifying a probe location at an end of the jump to the [[a]] second called function,
- eliminating the probe location at the end of the first called function and eliminating the probe location at the end of the jump to the second called function when the first called function includes a jump to ~~calls~~ the second ~~called~~ function and when the second ~~called~~ function includes a return ~~returns~~ to the calling function,
- determining whether probe locations produce redundant information;
- eliminating a probe location when a probe location produces redundant information;
- inserting probes at probe locations that are not eliminated;
- collecting non-redundant information relating to the execution of the application using the inserted probes; and
- analyzing the collected information.

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13. (Currently amended) The computer-readable storage medium of claim 12, wherein a first probe is configured to collect an address of the first called function, an address of the second called function, a first stack pointer, and a first time indicator, and further wherein a second probe is configured to collect the address of the second called function, a second stack pointer, and a second time indicator.

14. (Previously presented) The computer-readable storage medium of claim 12, wherein a first probe is configured to collect an address of the calling function, an address of the first called function, a first stack pointer, and a first time indicator, and further wherein a second probe is configured to collect the address of the first called function, a second stack pointer, and a second time indicator.

15. (Previously presented) The computer-readable storage medium of claim 12, further comprising:  
identifying a block of code to which execution of the application is directed upon occurrence of an error; and  
inserting a first probe at a beginning of the identified block of code and a second probe at an end of the identified block of code,  
wherein the first probe is configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

16. (Currently amended) A computer-implemented method for collecting information relating to execution of an application including at least one tail merged portion, the method being executed on a computer, the method comprising:

determining a set of probe locations in the application, wherein determining a set of probe locations includes:

- identifying a probe location at a beginning of a calling function,
- identifying a probe location at an end of the calling function,
- identifying a probe location at a beginning of a first called function,

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identifying a probe location at an end of the first called function,  
identifying a probe location in the calling function at the beginning of a  
call to the first called function,  
identifying a probe location in the calling function at the end of the call to  
the first called function,  
determining whether the first called function is one of: an internal called  
function and an external called function, and  
eliminating the probe location in the calling function at the beginning of  
the call to the first called function and eliminating the probe location in the calling  
function at the end of the call to the first called function when the first called function is  
an internal called ~~function-function~~:  
inserting probes in the identified locations that are not eliminated; and  
collecting non-redundant information relating to the execution of the  
application using the inserted probes.

Claims 17-19 (Cancelled).

20. (Previously presented) The method of claim 16, wherein a first probe is inserted  
and configured to collect an address of the first called function, and a first stack pointer, and a  
first time indicator.

21. (Cancelled).

22. (Previously presented) The method of claim 16, wherein a first probe is inserted  
and configured to collect an address of the calling function, an address of the first called  
function, a first stack pointer, and a first time indicator, and further wherein a second probe is  
inserted and configured to collect the address of the first called function, a second stack pointer,  
and a second time indicator.

23. (Previously presented) The method of claim 16, further comprising:

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identifying a block of code to which execution of the application is directed upon occurrence of an error; and

identifying a first probe location at a beginning of the identified block of code and a second probe location at an end of the identified block of code.

24. (Previously presented) The method of claim 23, wherein a first probe is inserted and configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and a second probe is inserted and configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

25. (Previously presented) The method of claim 16, further comprising: inserting probes in the probe locations that are not eliminated and using the inserted probes to collect the information relating to the execution of the application.

26. (Previously presented) The method of claim 25, further comprising: analyzing the collected information.

27. (Currently amended) A computer-readable storage medium having an application including computer-executable instructions including at least one tail merged portion, the computer-executable instructions comprising:

determining a set of probe locations in the application, wherein determining a set of probe locations includes:

- identifying a probe location at a beginning of a calling function,
- identifying a probe location at an end of the calling function,
- identifying a probe location at a beginning of a first called function,
- identifying a probe location at an end of the first called function,
- identifying a probe location in the calling function at the beginning of a

call to the first called function,

- identifying a probe location in the calling function at the end of the call to the first called function,

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determining whether the first called function is one of: an internal called function and an external called function, and

eliminating the probe location in the calling function at the beginning of the call to the first called function and eliminating the probe location in the calling function at the end of the call to the first called function when the first called function is an internal called ~~function~~ function.

inserting probes at locations in the application that are not eliminated;

collecting non-redundant information relating to the execution of the application

using the inserted probes; and

analyzing the collected information.

28. (Previously presented) The computer-readable medium of claim 27, wherein a first probe is configured to collect an address of the first called function, a first stack pointer, and a first time indicator.

29. (Previously presented) The computer-readable medium of claim 27, wherein a first probe is configured to collect an address of the calling function, an address of the first called function, a first stack pointer, and a first time indicator, and further wherein a second probe is configured to collect the address of the first called function, a second stack pointer, and a second time indicator.

30. (Original) The computer-readable medium of claim 27, having further computer-executable instructions for:

identifying a block of code to which execution of the application is directed upon occurrence of an error; and

inserting a first probe at a beginning of the identified block of code and a second probe at an end of the identified block of code,

wherein the first probe is configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

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31. (Currently amended) A computer system comprising a processor that is arranged to execute computer-executable instructions including at least one tail merged portion, the computer-executable instructions comprising:

determining a set of probe locations in the application, wherein determining a set of probe locations includes:

- identifying a probe location at a beginning of a calling function,
- identifying a probe location at an end of the calling function,
- identifying a probe location at a beginning of a first called function,
- identifying a probe location at an end of the first called function,
- identifying a probe location in the calling function at the beginning of a

call to the first function,

- identifying a probe location in the calling function at the end of the call to the first function,

- identifying a probe location at a beginning of a jump to a second called function

- identifying a probe location at an end of the jump to the ~~[[a]]~~ second called function, and

- eliminating the probe location at the end of the first called function and eliminating the probe location at the end of the jump to the second called function when the first called function includes a jump to ~~calls~~ the second called function and when the second called function includes a return ~~returns~~ to the calling ~~function~~, function;

- inserting probes in the identified locations that are not eliminated; and

- collecting non-redundant information relating to the execution of the application using the inserted probes.

Claims 32-34 (Cancelled).

35. (Currently amended) The computer system of claim 31, wherein a first probe is inserted and configured to collect an address of the first called function, an address of the second called function, a first stack pointer, and a first time indicator, and further wherein a second

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probe is inserted and configured to collect the address of the second called function, a second stack pointer, and a second time indicator.

36. (Cancelled).

37. (Previously presented) The computer system of claim 31, wherein a first probe is inserted and configured to collect an address of the calling function, an address of the first called function, a first stack pointer, and a first time indicator, and further wherein a second probe is inserted and configured to collect the address of the first called function, a second stack pointer, and a second time indicator.

38. (Previously presented) The computer system of claim 31, further configured to execute computer-executable instructions for:

identifying a block of code to which execution of the application is directed upon occurrence of an error; and

identifying a first probe location at a beginning of the identified block of code and a second probe location at an end of the identified block of code.

39. (Previously presented) The computer system of claim 38, wherein a first probe is inserted in the first probe location to collect an address of the block of code, a first stack pointer, and a first time indicator, and a second probe is inserted in the second probe location to collect the address of the block of code, a second stack pointer, and a second time indicator.

40. (Previously presented) The computer of claim 31, further configured to execute computer-executable instructions for inserting probes in the probe locations that are not eliminated to collect the information relating to the execution of the application.

41. (Previously presented) The computer system of claim 40, further configured to execute computer-executable instructions for analyzing the collected information.

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42. (Currently amended) A computer system comprising a processor that is arranged to execute computer-executable instructions including at least one tail merged portion, the computer-executable instructions ~~comprising~~ comprising:

determining a set of probe locations in the application, wherein determining a set of probe locations includes:

- identifying a probe location at a beginning of a calling function,
- identifying a probe location at an end of the calling function,
- identifying a probe location at a beginning of a first called function,
- identifying a probe location at an end of the first called function,
- identifying a probe location in the calling function at the beginning of a call to the first called function,
- identifying a probe location in the calling function at the end of the call to the first called function,
- determining whether the first called function is one of: an internal called function and an external called function, and
- eliminating the probe location in the calling function at the beginning of the call to the first called function and eliminating the probe location in the calling function at the end of the call to the first called function when the first called function is an internal called function.
- inserting probes at locations in the application that are not eliminated;
- collecting non-redundant information relating to the execution of the application using the inserted probes; and
- analyzing the collected information.

43. (Currently amended) The computer system of claim 42, wherein a first probe is configured to collect an address of the first called function, a first stack pointer, and a first time indicator, ~~and further wherein a second probe is configured to collect the address of the second called function, a second stack pointer, and a second time indicator.~~

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44. (Previously presented) The computer system of claim 42, wherein a first probe is configured to collect an address of the calling function, an address of the first called function, a first stack pointer, and a first time indicator, and further wherein a second probe is configured to collect the address of the first called function, a second stack pointer, and a second time indicator.

45. (Previously presented) The computer system of claim 42, further configured to execute computer-executable instructions for:  
identifying a block of code to which execution of the application is directed upon occurrence of an error; and  
inserting a first probe at a beginning of the identified block of code and a second probe at an end of the identified block of code,  
wherein the first probe is configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

Claims 46-51 (Cancelled).